



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.          | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------|-------------|----------------------|---------------------|------------------|
| 10/673,282               | 09/30/2003  | Sang Jin Yun         | YHK-0120            | 4745             |
| 34610                    | 7590        | 08/06/2007           | EXAMINER            |                  |
| KED & ASSOCIATES, LLP    |             |                      | BECK, ALEXANDER S   |                  |
| P.O. Box 221200          |             |                      | ART UNIT            |                  |
| Chantilly, VA 20153-1200 |             |                      | PAPER NUMBER        |                  |
|                          |             |                      | 2629                |                  |
|                          |             |                      | MAIL DATE           |                  |
|                          |             |                      | DELIVERY MODE       |                  |
|                          |             |                      | 08/06/2007          |                  |
|                          |             |                      | PAPER               |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                               |                            |  |
|------------------------------|-------------------------------|----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/673,282 | Applicant(s)<br>YUN ET AL. |  |
|                              | Examiner<br>Alexander S. Beck | Art Unit<br>2629           |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-10,12-16,18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-10,12-16,18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 19, 2007, has been entered.

### ***Response to Amendment***

2. Acknowledgment is made of the amendment filed by the applicant on May 8, 2007, in which: claims 1, 4, 12, 14, 16 and 18 are amended; claims 3, 5, 17 and 19 are cancelled; and claims 23 and 24 are added. Claims 1, 2, 4, 6-10, 12-16, 18 and 20-24 are currently pending in U.S. Patent Application No. 10/673,282 and an Office action on the merits follows.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description: reference characters T10, T11 and T12 in Figures 6B and 7B. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of

Art Unit: 2629

the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 4, 6-10, 12-16, 18 and 20-24 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 7,023,406 to Nunomura et al. (hereinafter "Nunomura").

As to claim 1, Nunomura discloses a method of driving a plasma display panel in Figure 4, comprising: setting the number of sustaining pulses in response to an average picture level (APL); and setting a period of each sustaining pulse in proportion to said average picture level, the sustaining pulse having a wider period as the average picture level becomes higher, the wider period being obtained by increasing a high width of the sustaining pulse (e.g. width > 4.0μs) in proportion to the average picture level (e.g. an APL from 4 to 8 corresponds to a sustaining pulse

Art Unit: 2629

of  $5.0\mu\text{s}$  and an APL from 9 to 15 corresponds to a sustaining pulse of  $6.4\mu\text{s}$ ) and maintaining a low width of the sustaining pulse (e.g. width =  $4.0\mu\text{s}$ ). (Nunomura at col. 7, ll. 13-35.)

As to claim 2, Nunomura discloses wherein said setting the number of sustaining pulses includes setting the number of sustaining pulses in inverse proportion to the average picture level (e.g. an APL of 4 corresponds to approximately 750 sustaining pulses and an APL of 15 corresponds to approximately 500 sustaining pulses). (Nunomura at col. 7, ll. 13-35.)

As to claim 6, Nunomura discloses wherein a maximum period of the sustaining pulse is wider, by approximately  $0.5\mu\text{s}$  to  $10\mu\text{s}$ , than a minimum period of the sustaining pulse (e.g.  $6.4\mu\text{s} - 4.0\mu\text{s} = 2.4\mu\text{s}$ ). (Nunomura at col. 7, ll. 13-35.)

As to claim 7, Nunomura discloses wherein said period of the sustaining pulse is changed in at least partial region of said average picture level (e.g. partial regions APL = 0 to 3, 4 to 8 and 9-15). (Nunomura at col. 7, ll. 13-35.)

As to claim 8, Nunomura discloses setting a minimum limit frequency at more than a desired average picture level such that said period of the sustaining pulse is limited to less than a certain width (e.g. frequency limit is inversely proportional to the period of sustain pulses). (Nunomura at col. 7, ll. 13-35.)

As to claim 9, Nunomura discloses wherein said minimum limit frequency is set such that a maximum period of the sustaining pulse is widened, by approximately  $0.5\mu\text{s}$  to  $10\mu\text{s}$ , than a minimum period of the sustaining pulse (e.g.  $6.4\mu\text{s} - 4.0\mu\text{s} = 2.4\mu\text{s}$ ). (Nunomura at col. 7, ll. 13-35.)

As to claim 10, Nunomura discloses setting a maximum limit frequency at less than a desired average picture level such that said period of the sustaining pulse is limited to more than

Art Unit: 2629

a certain width (e.g. frequency limit is inversely proportional to the period of sustain pulses). (Nunomura at col. 7, ll. 13-35.)

As to claim 22, Nunomura discloses wherein said period of the sustaining pulse is increased in a stepwise manner in accordance with the average picture level as said average picture level goes from a lower level into a higher level. (Nunomura at col. 7, ll. 13-35.)

As to claim 4, Nunomura discloses a method of driving a plasma display panel in Figure 3, comprising: setting the number of sustaining pulses in response to an average picture level; and setting a period of each sustaining pulse in proportion to said average picture level, the sustaining pulse having a wider period as the average picture level becomes higher, the wider period being obtained by increasing a low width of the sustaining pulse (e.g. width < 4.0 $\mu$ s) in proportion to the average picture level (e.g. an APL from 0 to 1 corresponds to a sustaining pulse of 2.0 $\mu$ s and an APL from 2 to 5 corresponds to a sustaining pulse of 2.7 $\mu$ s) and maintaining a high width of the sustaining pulse (e.g. width = 4.0 $\mu$ s). (Nunomura at col. 6, ll. 50-67.)

As to claim 12, Nunomura discloses a method of driving a plasma display panel in Figure 4, comprising: setting the number of sustaining pulses in response to an average picture level; and setting a high width of the sustaining pulse (e.g. width > 4.0 $\mu$ s) in proportion to said average picture level, the high width being set such that the sustaining pulse has a wider period as the average picture level becomes higher (e.g. an APL from 4 to 8 corresponds to a sustaining pulse of 5.0 $\mu$ s and an APL from 9 to 15 corresponds to a sustaining pulse of 6.4 $\mu$ s). (Nunomura at col. 7, ll. 13-35.)

As to claim 13, Nunomura discloses wherein said high width of the sustaining pulse is changed in at least partial region of said average picture level (e.g. partial regions APL = 4 to 8 and 9-15). (Nunomura at col. 7, ll. 13-35.)

As to claim 23, Nunomura discloses where setting the high width occurs without setting a low width of the sustaining pulse (e.g. width =  $4.0\mu\text{s}$ ) in proportion to said average picture level. (Nunomura at col. 7, ll. 13-35.)

As to claim 14, Nunomura discloses a method of driving a plasma display panel in Figure 3, comprising: setting the number of sustaining pulses in response to an average picture level; and setting a low width of the sustaining pulse (e.g. width <  $4.0\mu\text{s}$ ) in proportion to said average picture level, the low width being set such that the sustaining pulse has a wider period as the average picture level becomes higher (e.g. an APL from 0 to 1 corresponds to a sustaining pulse of  $2.0\mu\text{s}$  and an APL from 2 to 5 corresponds to a sustaining pulse of  $2.7\mu\text{s}$ ). (Nunomura at col. 6, ll. 50-67.)

As to claim 15, Nunomura discloses wherein said low width of the sustaining pulse is changed in at least partial region of said average picture level (e.g. partial regions APL = 0 to 1 and 2 to 5). (Nunomura at col. 6, ll. 50-67.)

As to claim 24, Nunomura discloses where setting the low width occurs without setting a high width of the sustaining pulse (e.g. width =  $4.0\mu\text{s}$ ) in proportion to said average picture level. (Nunomura at col. 6, ll. 50-67.)

As to claim 16, Nunomura discloses a driving apparatus for a plasma display panel in Figures 4 and 5, comprising: average picture level means for setting the number of sustaining pulses in response to an average picture level; and period setting means for setting a period of

each sustaining pulse in proportion to said average picture level, the sustaining pulse having a wider period as the average picture level becomes higher, the wider period being obtained by increasing a high width of the sustaining pulse (e.g. width > 4.0 $\mu$ s) in proportion to the average picture level (e.g. an APL from 4 to 8 corresponds to a sustaining pulse of 5.0 $\mu$ s and an APL from 9 to 15 corresponds to a sustaining pulse of 6.4 $\mu$ s) and maintaining a low width of the sustaining pulse (e.g. width = 4.0 $\mu$ s). (Nunomura at col. 7, ll. 13-35; col. 8, ln. 39 – col. 9, ln. 5.)

As to claim 20, Nunomura discloses limit value setting means in Figure 5 for setting at least one of a maximum limit value capable of widening a period of the sustaining pulse and a minimum limit value capable of narrowing said period of the sustaining pulse. (Nunomura at col. 7, ll. 13-35; col. 8, ln. 39 – col. 9, ln. 5.)

As to claim 21, Nunomura discloses wherein said period setting means receives at least one of said maximum limit value and said minimum limit value to control said period of the sustaining pulse. (Nunomura at col. 7, ll. 13-35; col. 8, ln. 39 – col. 9, ln. 5.)

As to claim 18, Nunomura discloses a driving apparatus for a plasma display panel in Figures 3 and 5, comprising: average picture level means for setting an average picture level corresponding to a video data; and period setting means for setting a period of a sustaining pulse in such a manner to be in proportion to said average picture level set by the average picture level means, the sustaining pulse having a wider period as the average picture level becomes higher, the wider period being obtained by increasing a low width of the sustaining pulse (e.g. width < 4.0 $\mu$ s) and maintaining a high width of the sustaining pulse (e.g. width = 4.0 $\mu$ s), wherein said period setting means sets the low width of the sustaining pulse in proportion to said average picture level (e.g. an APL from 0 to 1 corresponds to a sustaining pulse of 2.0 $\mu$ s and an APL



Art Unit: 2629

from 2 to 5 corresponds to a sustaining pulse of 2.7 $\mu$ s). (Nunomura at col. 6, ll. 50-67; col. 8, ln. 39 – col. 9, ln. 5.)

### ***Response to Arguments***

6. Applicant's arguments filed May 8, 2007, have been fully considered but they are not persuasive, and it is believed that those arguments have been addressed in the claim rejections above.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6,630,796 to Tokunaga et al. discloses a method and apparatus for driving a plasma display panel. U.S. Patent No. 6,756,977 to Ide discloses a display device and method of driving a display panel. U.S. Patent No. 6,768,479 to Nakamura discloses a method for driving a plasma display panel.

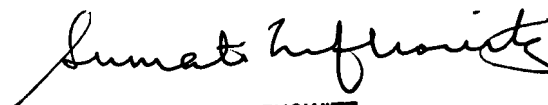
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander S. Beck whose telephone number is (571) 272-7765. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander S. Beck  
July 30, 2007



SUMATI LEFKOWITZ  
SUPERVISORY PATENT EXAMINER